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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,815	09/25/2000	Norio Chiba	S004-4054(PC)	3682

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50 Broadway
31st Floor
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EXAMINER

VUONG, BACH Q

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/601,815

Applicant(s)

CHIBA ET AL.

Examiner

Bach Q Vuong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Drawings

The drawings are objected to because there are no labels in figures 1, 7, 11 and 13. Applicant is suggested to label each of fields or blank box in figures 1, 7, 11 and 13. A proposed drawing correction or corrected drawings are required in reply to the Office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-13, 15, 16 and 19-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kado et al. (US 6101164).

Kado et al., according to Figs. 1-12, shows an information recording apparatus comprising all features of the claimed invention.

Regarding claim 1, see Figs. 1-7 which show an information recording apparatus comprising: a probe (see probe 4) for producing or scattering near field light; probe access means for causing a tip of the probe to access a desired region of a recording medium; probe scanning means (see column 12, lines 6-28) for scanning the tip of the probe across a surface of the recording medium; and heating radiating means (see power supply 8) for radiating heat through the tip of the probe; wherein the surface of the recording medium (see thin film 2) is

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provided with a thin film that varies in physical properties in response to hearing of the surface by the tip of the probe.

Regarding claim 2, see Figs. 1 and 2 which show an information recording apparatus wherein the heat radiating means comprises an electric heating element (see power supply 8) for heating the tip of the probe.

Regarding claim 3, see Figs. 7 and 8 which show an information recording apparatus wherein the heat radiating means comprises a laser light source (semiconductor laser 36) for projecting laser light through the tip of the probe.

Regarding claim 4, see Figs. 7 and 8 which show an information recording apparatus wherein the probe (see probe 30) has a microscopic aperture at the tip thereof, and the laser light source (see laser 36) introduces light through the microscopic aperture.

Regarding claim 5, see Figs. 7 and 8 which show an information recording apparatus wherein the tip of the probe (see probe 30 and cantilever 31) has a metal film formed on a surface thereof except for microscopic aperture.

Regarding claim 6, see the respective disclosure of Fig. 10 which show an information recording apparatus further comprising auxiliary heat radiating means (see 41 and 42) for heating the recording medium without radiating heat through the tip of probe.

Regarding claim 7, see Fig. 6 which shows an information recording means comprising: a probe (see probe 20) having a sharpened tip; probe access means for causing the tip of the probe to access a desired region of a recording medium; probe scanning means for scanning the tip of the probe across a first surface of the recording medium; and an illumination light source (see laser element 24) for illuminating a second surface of the

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recording medium opposite the first surface so that a near field light is produced above the first surface of the recording medium; wherein the first surface of the recording medium (film 18) is provided with a thin that varies in physical properties in response to hearing of the surface.

Regarding claim 8, see Fig. 6 which shows an information recording apparatus wherein the illumination light source (see laser element 24) further illuminates the light surface of the recording medium to produce a near field light above the first surface of recording medium.

Regarding claim 9, see the rejection applied to claim 1.

Regarding claim 10, see Fig. 10 which shows a method for recording information further comprising an auxiliary heating process of locally heating the recording medium using an auxiliary heating device (see 41 and 42) that does not radiate heat energy through the tip of the probe.

Regarding claim 11, see Figs. 1-7 which show a method of recording information including: an illumination process of illuminating a desired position on surface of recording medium to produce near field light above the surface of the recording medium at the desired position (see laser element 24); a probe access process of causing a sharpened tip of a probe to access the desired position of the recording medium to record information on the recording medium by locally intensified energy caused by insertion of the tip of the probe in the near field at the desired position (see probe 20); and a probe scanning process of scanning the tip of the probe across the surface of the recording medium to the desired position on the recording medium to record the information (see column 12, lines 6-28).

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Regarding claim 12, see Figs. 1-7 which show a method of recording information wherein the illumination process comprises a process of illuminating a surface of the recording medium opposite a surface to which the sharpened tip of the probe (see probe 20) is accessed so as to produce near field light on the surface of the recording medium accessed by the sharpened tip (see the respective disclosure of Fig. 6 for details).

Regarding claim 13, see Figs. 1-7 which show an information recording apparatus wherein the probe comprises a cantilever probe (see cantilever 21, probe 20 in Fig. 6); and heating radiating means comprises a laser light source (see laser element 36 and optical system 37 in Fig. 7) for projecting a laser light through the cantilever probe so as to radiate the recording medium through the tip of the probe.

Regarding claim 14, see Figs. 1-12 which show an information recording wherein the probe has a microscopic aperture at the tip, a diameter of the aperture is inherently smaller than a wavelength of the laser light.

Regarding claim 15, see Figs. 1-4 which show an information recording apparatus wherein the probe comprises a cantilever probe (see cantilever 6 in Fig. 1); and the heat radiating means (see power supply 8) comprises a heating element attached to the probe for heating the tip of the probe.

Regarding claim 16, see Figs. 6-8 which show an information recording apparatus wherein the probe (see probe 30 and 20) comprises an optical waveguide probe having waveguide portion and a sharpened tip portion; and the heat radiating means (see optical system 37 and laser source 36) comprises a laser light source for projecting a laser light

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through the optical waveguide portion so that the light is projected onto the desired region of the recording medium through the sharpened tip portion.

Regarding claim 17, see the rejection applied to claim 14.

Regarding claim 19, see Figs. 1-8 which show an information recording apparatus wherein the thin film comprises a phase change film (see column in Fig. 1).

Regarding claim 20, see Figs. 1-7 which show an information recording apparatus comprising a probe (see probe 4, 6) having a tip for producing or scattering near field light above a surface of a recording medium, the surface of the recording medium being coated with a material (see thin film on the surface of the recording medium 3) having a physical property that varies in response to the application of thermal energy thereto; means for causing the probe tip to come into close proximity with the surface of the recording medium and scanning the probe tip across the surface of the recording medium (see column 12, lines 1-28); and heat generating means (see power supply 8, probe 4, 6) for heating a desired region of the surface of the recording medium to change the physical property of the coating material in the desired region.

Regarding claim 21, see Figs. 1-6 which show an information recording apparatus wherein the heat generating means (see power supply 8, and probe 4, 6) heats the desired region of the recording medium to a temperature insufficient to change the physical property of the coating material, and insertion of the probe tip in the vicinity of the heated region of the surface locally intensifies thermal energy applied by the heat generating means to heat the coating material in the desired region to a temperature sufficient to change the physical property (see column 12, line 30 through column 13, line 48).

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Regarding claim 22, see Figs. 1 and 2 which show an information recording apparatus wherein the heat generating means comprises an electric heating element (see power supply 8).

Regarding claim 23, see Figs. 6 which show an information recording apparatus wherein the heat generating means the heating generating means (see optical system 37 and laser source 36) comprises a laser light source for producing a laser light for radiating and thereby heating the desired region of the recording medium.

Regarding claim 24, see Figs. 1-6 which show an information recording apparatus wherein the laser light (see laser source 24 and 25 in Fig. 6) is irradiated on a surface of the recording medium opposite the surface to which the probe tip is brought into close so that the near field light is produced on the surface to which the probe tip is brought into close proximity, and insertion of the probe tip in a region of the near field light produces locally intensified energy for heating the recording medium to change the physical property thereof.

Regarding claim 25, see the rejection applied to claim 4.

Regarding claim 26, see the rejection applied to claim 5.

Regarding claim 27, see Figs. 1-10 which show an information recording apparatus wherein the heat generating means comprises a laser light source (see semiconductor laser 47 in Fig. 10) for producing a laser light and projecting the laser light through the probe tip to irradiate and thereby heat the desired region of the recording medium, and an auxiliary heat source (see reference numerals 41 and 42 in Fig. 10) for heating the desired region of the recording medium without heating the probe tip, so that the combined heat produced by the

laser light source and the auxiliary heat source is sufficient to change the physical property of the film in the desired region (see respective disclosure of Fig. 10).

Regarding claim 28, see Figs. 1-10 which show a method of using a scanning probe instrument to record information on a recording medium, comprising the steps of: providing a recording medium (see medium 3) having a coating that change in physical characteristics in response to an applied energy; generating near field light in the vicinity of a desired region of the recording medium at which information is to recorded; and causing a tip of a probe of the scanning probe instrument to come into close proximity with the recording medium at the desired region to generate sufficient energy in the desired region to record information onto the recording medium (see column 12, lines 1-28).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kado et al. (US 6,101,164) in view of Yee et al. (6,535,474).

Kado et al., according to Figs. 1-1, shows all the features of the instant claimed invention (see the rejection above) except for the use of an optical fiber probe. Yee et al., according to Fig. 1 and 2, teaches the use of the optical fiber probe tip as particularly recited in claim 18 (see optical fiber 14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to put the use of optical fiber probe as taught by Yee et al.

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into the information recording apparatus of Kado et al in order to provide an alternative embodiment of recording/scanning information on optical disc.

Cited References


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited references relate to an information recording apparatus and method for recording/reproducing information recorded on recording medium using a conductive probe.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bach Q Vuong whose telephone number is (703) 305-7355. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (703) 305-6137. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

BV
August 9, 2003


THANG V. TRAN
PRIMARY EXAMINER